

Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

265. Proposed by R. D. CARMICHAEL, Hartselle, Ala.

Find the Cartesian equation of a curve in a vertical plane such that a particle, sliding down the curve under the force of gravity alone, will require to pass from any point of beginning to the lowest point of the curve, a time proportional to the square of the distance to be traversed along the curve.

266. Proposed by DR. O. E. GLENN.

Given the feet of the three perpendiculars from any point $a$ on the circumcircle to the sides of the triangle are collinear, then if on the three chords $\overline{a\,b}$, $\overline{a\,c}$, $\overline{a\,d}$, as diameters circles be described, the points of intersection of these circles are collinear. [Salmon's *Higher Plane Curves*].

267. Proposed by W. W. LANDIS, Dickinson College, Carlisle, Pa.

Prove that every orthogonal system of circles in a plane is an isothermal system.

## GROUP THEORY.

9. Proposed by DR. L. E. DICKSON, The University of Chicago.

Does there exist a triply transitive group on $m$ letters of order $m(m-1)(m-2)$ other than the linear fractional group in the Galois Field of order $p^n=m-1$ and the group $720_3$ on 10 letters (Cole, *Quarterly Journal*, 1895, p. 44)? The question relates to Problem 99, MONTHLY, March, 1900.

10. Proposed by DR. O. E. GLENN.

Find the order of the group of isomorphisms of the group of order $p^4$ defined by the relations $P_1{}^{p^2}=P_2{}^{p^2}=I$, $P_1P_2=P_2P_1$.

## MECHANICS.

183. Proposed by W. J. GREENSTREET, M. A., Stroud, England.

Two light rods are jointed at $O$. $OA$ is attached by a hinge at $A$ to a fixed rod $AB$ and $B$ is attached to a ring which can slide along $AD$. A force $P$ acts at $O$ towards $AB$ at right angles to $AB$, and force $Q$ acts at $B$ along $BA$. The angles $OAB$, $OBA$ are acute. There is no friction in the system. Show that for equilibrium we must have $P/Q=\sin AOB/(\cos AOB.\cos OBA)$.

184. Proposed by G. B. M. ZERR, A. M., Ph. D., Parsons, W. Va.

A sphere, radius $a$, rests between two parallel thin perfectly rough rods $A$ and $B$ in the same horizontal plane at a distance apart equal to $2c$; the sphere is turned about $A$ until its center is very nearly vertically over $A$; it is then allowed to fall back. Prove that it will rock between $A$ and $B$ if $10c^2<7a^2$; also, that $\theta_r$, the angle through which it will turn after the $r$th impact is given by the equation $\cos\theta_r=\frac{\sqrt{(a^2-c^2)}}{a}+\frac{a-\sqrt{(a^2-c^2)}}{a}\left(1-\frac{10c^2}{7a^2}\right)^{2r}$.